Testimony of
John Hammerschmidt, Member
National Transportation Safety Board
before the
Committee on Commerce, Science and Transportation
United States Senate
Regarding
Pipeline Safety Act
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Good morning Mr. Chairman and Members of the Committee. I am pleased to represent the National Transportation Safety Board before you today to discuss pipeline safety issues.

I would like to start with an update for the Committee on the status of the Safety Board's investigation of the fatal pipeline accident that occurred last June in Bellingham, Washington. I would stress, however, that the Board's investigation is ongoing, and that the following information is preliminary. It may be refined and changed as the investigation proceeds.

As an initial point, I would note the National Transportation Safety Board has experienced significant procedural problems with the Bellingham investigation. The proximity of a criminal inquiry has been a serious issue for us. We have been unable to talk to employees of the operator, who fear the uncertainties of a criminal inquiry; and we have, until recently, been unable to proceed with testing of the physical evidence.

Parallel investigations, by accident investigators and criminal authorities, pose a host of complicated issues. We requested, in our own reauthorization package, a restatement of Congressional confidence in the priority presently accorded by statute to our work, and we are gratified that the House of Representatives has responded favorably.

We note similar provisions in the bill awaiting action by this Committee. National Transportation Safety Board staff is working with staff of this Committee to ensure that the uncertainties of Bellingham do not become the norm, and we earnestly request your close attention to this issue.

After a 16-inch diameter pipeline owned by Olympic Pipe Line Company ruptured, approximately ¼ million gallons of gasoline were released into a nearby creek. The gasoline ignited and two 10-year-old boys and an 18-year-old young man lost their lives. Shortly after being notified of the accident, the National Transportation Safety Board launched a team of investigators to the scene. Safety Board personnel were on scene for approximately 5 weeks.

The accident section of pipeline was originally installed in 1965 and then rerouted in 1966 to allow for construction of a water treatment plant. In 1993 and 1994, a contractor working on behalf of the City of Bellingham installed a 72-inch water line across Olympic's pipeline, approximately 20 feet south of the

rupture. A new 24-inch diameter water line was also installed and connected to an existing water line 10 feet south of the rupture.

Although Federal regulations do not require internal pipeline inspections, in 1991, 1996 and 1997 Olympic inspected the section of pipe that failed last June. The 1996 and 1997 inspections had identified anomalies in the pipeline near the location of the subsequent rupture, however the pipeline was not excavated, visually inspected or repaired at those locations. The Safety Board is looking into criteria used by Olympic Pipe Line to evaluate the identified anomalies. However, Olympic personnel with direct knowledge of the decision-making process have declined to be questioned by the Safety Board.

Sections of the Olympic pipe were carefully excavated under the Safety Board's supervision and then transported to our laboratory facilities in Washington D.C. During the excavation process, the water lines that had been installed across Olympic's pipeline in the vicinity of the rupture were exposed, and indications of external damage to the pipeline were observed. Safety Board investigators have interviewed personnel from the City of Bellingham, the firm that designed the water plant modifications and managed the construction activities on behalf of the City of Bellingham, as well as the contractor who installed the water piping. However, Olympic employees who were assigned to inspect the construction activity have also declined to speak with Safety Board investigators.

Preliminary visual examination of the ruptured pipeline segment has shown that the fracture originated at a gouge mark on the surface of the pipe. Additional gouge marks and dents were found on the exterior surface of the ruptured pipe segment, and inward protrusions were noted on the inside of the pipe. Examination of a second pipe segment noted two dents.

Because of the criminal inquiry, we had not been able to test the failed pipe until now. Microscopic examination of the fracture face is underway this week to help us determine whether there are any indications of fatigue near the point of origin. Additional tests are also being conducted to determine the microstructure and charact64.ctuse of the pipe miterils.

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pressure data, design information, construction records, telephone logs and e-mail records, along with the applicable company policies and procedures related to pipeline operations and maintenance, as part of our investigation. However, we may never know what happened within the control center around the time of the accident unless we are able to interview the individuals operating the pipeline when the accident occurred. There are at least four key individuals who may have direct knowledge of the events that occurred in the control room during the accident sequence. Those individuals include two controllers who were on duty at the time of the accident, their supervisor, and a former controller now responsible for maintaining the SCADA system and acting as a relief controller. He was reportedly performing modifications to the computer programming at the time of the incident. These individuals are also critical to our investigation into human performance issues, such as training, fatigue, and ergonomics, that may be relevant with this accident. As I mentioned, these individuals and others have declined to talk with us.

Several of the issues being looked into as a result of the Bellingham accident -- excavation damage, pipeline integrity, training of personnel -- have been concerns of the Safety Board for many years

It is unfortunate that some of the issues we have addressed, which have been the subject of Safety Board recommendations, have not been acted on in a timely manner. Each of these issues could be accomplished without legislative action. However, because the Department has not acted, Congressional intervention may be necessary.

**Safety Issues**

I would now like to discuss general pipeline safety issues. As the Federal regulatory agency for pipeline safety, the Research and Special Programs Administration (RSPA) plays a crucial role. As the Board has often stated, RSPA and its Office of Pipeline Safety (OPS) have not responded as aggressively to its mandate as we would have liked. RSPA's implementation rate of pipeline safety recommendations is about 69 percent, the lowest acceptance rate of any modal administration in the Department of Transportation. We do not think this low percentage is a result of ill-conceived recommendations. In fact, the acceptance rate of our pipeline safety recommendations issued to the pipeline community as a whole is about 87 percent. Too often, RSPA will find it difficult even to respond in a timely fashion, one way or another. We note that Section 3 of S.2438 addresses the need for timely responses to pipeline safety recommendations.

We believe that RSPA's lack of action continues to place the American people at risk. Administrator Coyner has met with our Board Members and has made a commitment to improve RSPA's response rate to Safety Board safety recommendations. As a result, we have seen more timely responses to new safety recommendations, and increased activity on damage prevention and corrosion control issues. However, we are still concerned about the lack of timely action on other issues. We feel the areas listed below are areas that require immediate action:

pipeline integrity;
accident data collection;

training;
valve automation; and
excavation damage prevention.

Pipeline Integrity

The continued operation of pipelines with integrity problems is a recurring issue in accidents investigated by the Safety Board. In 1987, as a result of investigations into three pipeline accidents (Beaumont, Kentucky; Lancaster, Kentucky; and Mounds View, Minnesota), the Safety Board recommended that RSPA require pipeline operators to periodically inspect their pipelines to identify corrosion, mechanical damage, or other time-dependent defects that may prohibit their safe operation. Yet, 13 years after our initial recommendation was issued, there are no regulations that require pipeline operators to perform periodic inspections or tests to locate and assess whether this type of damage exists on other pipelines. Due to the length of time that had passed without final RSPA action, the Safety Board in June 1999, classified its recommendation as "Open-Unacceptable Response." We note that on April 24, 2000, RSPA issued a Notice of Proposed Rulemaking (NPRM) on this issue, and the Safety Board is in the process of reviewing it. We also note that Section 5 of S.2438 will require a pipeline integrity inspection program to be completed within 12 months after the date of enactment in unusually sensitive areas and high-density population areas.

The Safety Board is currently investigating five other pipeline accidents with potential pipeline integrity problems that occurred during 1999-2000. In these accidents, the lack of inspections or adequate corrective actions may be relevant safety issues.

Accident Data Collection

For over 25 years, the Safety Board has pointed out major deficiencies and recommended changes to RSPA's pipeline accident data collection process. In a January 1996 report, *Evaluation of Accident Data and Federal Oversight of Petroleum Product Pipelines*, the Safety Board concluded that RSPA's failure to fully implement the Safety Board's 1978 recommendations to evaluate and analyze its accident data reporting needs has hampered RSPA's ability to effectively oversee the Nation's pipelines.

Then, in December 1997, another Safety Board report, *Protecting Public Safety Through Excavation Damage Prevention*, indicated that RSPA's reporting forms are poorly designed and fail to provide necessary information. For example, the form for hazardous liquid pipelines lists just seven generic causal categories, such as corrosion, outside force damage, and other. In 1996, RSPA indicated that "outside force" damage was the leading cause of accidents; the second leading cause was "other" which may include landslides, earthquakes and floods. Although we know that excavation damage is the leading cause of pipeline accidents, it is not listed as a category. Instead, most excavation damage accidents are reported as outside force damage, other, or incorrect operation by operator personnel. The Safety Board has repeatedly pointed out that RSPA's definitions of accident causes are imprecise and that distinctions between categories are vague. Such deficiencies preclude effective accident trend analysis and

performance evaluation. Therefore, the Safety Board has recommended that RSPA revise the causal categories on its gas and hazardous liquid pipeline accident report forms to eliminate overlapping and confusing categories, to clearly list excavation damage as one of the data elements, and to consider developing subcategories. We note that Section 10 of S.2438 will require improved data collection within 12 months.

In an April 1998 report, *Brittle-like Cracking in Plastic Pipe for Gas Service*, the Safety Board noted that RSPA's accident data are insufficient to serve as a basis for assessing the long-term performance of plastic pipe. Because the Board lacked adequate data from RSPA, we had to review technical literature and contact experts in gas distribution plastic piping to estimate the frequency of brittle-like cracks in plastic piping. Based on that research, the report noted that brittle-like failures could be the second most frequent failure mode for older plastic pipe and recommended that RSPA determine the susceptibility of older plastic piping to premature brittle-like cracking.

Training Of Pipeline Personnel

The Safety Board has long been concerned about the need to adequately train personnel in all transportation modes, including pipeline. In 1987, after several pipeline accidents in which inadequate training was an issue, the Safety Board recommended that RSPA require operators to develop training programs for pipeline personnel. After 11 years had passed since the recommendation was issued without final action, the Safety Board classified the recommendation as "Closed-Unacceptable Action."

However, inadequate training continues to be a factor in pipeline accidents. In the 1996 Fork Shoals, South Carolina, pipeline accident, the Safety Board found that pipeline controllers had been inadequately trained to recognize and handle emergency conditions. In that accident, the controller had mistakenly shut down a pump station, failed to recognize his mistake, and continued to operate the pipeline after it ruptured. As mentioned earlier, this action resulted in the release of nearly one million gallons of fuel oil into the Reedy River.

On November 21, 1996, a pipeline accident in San Juan, Puerto Rico, resulted in 33 fatalities and 69 injuries. Our investigation determined that the gas company's employees had not been properly trained to survey, pinpoint, or test for pipeline leaks, and failed to locate a reported leak before the explosion occurred. Following that accident, the Safety Board recommended that RSPA complete a final rule on employee qualification, training, and testing within one year.

In October 1998, RSPA published an NPRM to require pipeline operators to develop a written qualification program for individuals operating pipelines. However, it did not establish training requirements for personnel and it allowed companies to evaluate an individual's ability to perform tasks using methods such as oral examinations or observations of job performance. In January 1999, the Board provided comments to RSPA that urged them to amend the rule to include strong training and testing requirements to ensure that employees can properly perform their jobs. In February 1999, the Safety Board classified its recommendation as "Open-Unacceptable Action," because the NPRM did not adequately address those

issues. In August 1999, RSPA published its final rule, which was substantially unchanged from the NPRM. We note the Section 4 of S.2438 would require reformulation of RSPA's rule along the lines of the Safety Board's recommendations for training and recurrent training. We also note that legislation proposed by Senator Murray would require qualification testing and certification, similar to requirements for aviation personnel.

## Valve Automation

The Safety Board has long advocated the increased use of valve automation to protect public safety and the environment by reducing the consequences of pipeline failures. The issue was first addressed 30 years ago in a study entitled *Effects of Delay in Shutting Down Failed Pipeline Systems and Methods of Providing Rapid Shutdown*.

Since then, a number of other accidents have repeatedly highlighted the need to control the accidental release of product. On July 8, 1986, in Mounds View, Minnesota, gasoline spewed from a pipeline and flowed down a city street before igniting and seriously burning three people, two of whom later died. The Safety Board found that the pipeline operator could not promptly stop the release of gasoline.

On March 23, 1994, in Edison, New Jersey, a high-pressure natural gas pipeline exploded and a fire ensued. Heat from that fire ignited several building roofs in an apartment complex. The Safety Board again found that the pipeline operator's inability to promptly stop the flow of natural gas contributed to the accident's severity. In February 1995, the Safety Board recommended that RSPA expedite requirements for the rapid shutdown of failed pipeline segments. Later in 1995, RSPA held a public workshop on this subject and it is continuing to study the issue. Despite RSPA's failure to require these systems, several companies have voluntarily put in valves to rapidly shut down their failed pipelines.

In an accident in May 1996, near Gramercy, Louisiana, the pipeline company took approximately 4½ hours to manually close the valves on either side of a ruptured pipeline. Almost 500,000 gallons of gasoline were ultimately released into the environment. In September 1998, the Board recommended that the pipeline operator install more valve automation into its pipeline system. The operator has advised the Board that it is currently evaluating which existing valves to retrofit for remote control operation and is planning to install this technology into a new pipeline that may run from Kenova, West Virginia, to Columbus, Ohio.

Obviously, this technology is available and is being used. We will be waiting for too long, however, if we rely solely on voluntary efforts of industry. RSPA must require systems that limit product release after a major pipeline rupture for all operators, so that this is understood, across-the-board, as a necessary cost of doing business.

## Excavation Damage Prevention

Excavation damage is the leading cause of pipeline accidents. This issue was added to the Safety Board's "Most Wanted" list of transportation issues in 1997, and in December 1997, we published a study entitled

*Protecting Public Safety Through Excavation Damage Prevention*. As a result, the Board issued 26 recommendations aimed at improving excavation damage prevention covering such areas as:

technology to accurately locate and mark underground facilities;
training and educating of excavation personnel;
use of data to evaluate programs; and
enforcement of damage prevention programs.

Preventing excavation damage to pipeline systems is a top priority for RSPA. RSPA's efforts in the area of underground damage prevention include: an ongoing nationwide Dig Safely Campaign, a completed report on damage prevention best practices, *Common Ground*, and helping to establish an organization to implement and continue to develop the best practices.

State Inspection Programs

State pipeline safety programs are important to help ensure that pipeline system operators comply with minimum safety standards. In fact, state pipeline inspectors who conduct daily inspection activities represent more than 90 percent of the safety inspection workforce. Yet, Federal matching funds provided to states have consistently been below the 50 percent level authorized by the Natural Gas Pipeline Safety Act. The Board has been advised by representatives of several states that funds have not kept pace with demand, and that inadequate funds threaten the infrastructure of the Nation's pipeline safety program.

Additionally, we are concerned that while states have many more inspectors than OPS, that OPS is removing states from interstate pipeline inspection programs. State officials have advised that OPS, while previously encouraging states to act as interstate agents, is now denying their applications. In fact, states have advised the Safety Board that OPS has effectively halted this program.

For example, in Virginia, approximately 2 million gallons of petroleum products have spilled from pipelines since 1974. In an accident near Reston, Virginia, in 1993, more than 407,000 gallons of diesel fuel spilled from a pipeline into Sugarland Creek, a tributary of the Potomac River. Because of several liquid pipeline accidents that occurred in Virginia, the General Assembly passed legislation in 1994 authorizing the State Corporation Commission to seek interstate agent status from OPS, which would allow state inspectors to inspect interstate pipelines. OPS apparently originally supported this legislation, and for several years encouraged the Commission to pursue interstate agent status. Unfortunately, when the Virginia Commission was ready to accept agent status, OPS denied their application.

The OPS currently has the ability to utilize these state resources for regular inspection activities through its partnering agreements. We believe state assistance in the interstate pipeline inspection program may go a long way to improving pipeline safety. Because a single pipeline may operate in as many as 10 states, effective Federal oversight is needed to ensure that pipeline operators are meeting minimum safety standards. It is also critical that comprehensive, consistent, and effective regulatory requirements for interstate pipelines be enacted at the Federal level to protect citizens in all of the states. We believe that

Congress needs to closely examine how the states are utilized, funded, and evaluated by OPS. However, for the consistent and effective application of regulatory requirements to interstate pipelines, the authority and responsibility should rest with the OPS.

Mr. Chairman, this concludes my testimony. I would be happy to answer the Committee's questions.